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EXAMINER	
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ART UNIT	**PAPER NUMBER**
1636	18

DATE MAILED: 10/02/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

Offic Action Summary	Applicati n No.	Applicant(s)	
	09/734,329	DE CROMBRUGGHE ET AL.	
	Examiner	Art Unit	
	Terry A. McKelvey	1636	

-- The MAILING DATE of this communication appears n the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *2/3/03, 7/22/03* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1,3,4,6,7,9-30 and 32-55* is/are pending in the application.

4a) Of the above claim(s) *34-39 and 47* is/are withdrawn from consideration.

5)☒ Claim(s) *48 and 50-55* is/are allowed.

6)☒ Claim(s) *1,3,4,6,7,9-30,32,33,40-46 and 49* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☒ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *10 September 2001* is/are: a)☐ accepted or b)☒ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) *6, 12* .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

This application contains sequence disclosures that are encompassed by the definitions for nucleotide and/or amino acid sequences set forth in 37 C.F.R. §§ 1.821(a)(1) and (a)(2). However, this application fails to comply with the requirements of 37 C.F.R. § 1.821(d). The application refers to sequences without the use of the correct identifier.

For example, Figures 2A-2B and Table 4 in the application set forth sequences without sequence identifiers.

Applicants should carefully review the specification to identify and properly label each sequence that is referred to within the specification, including drawings. Sequences in drawings can be identified with a SEQ ID NO: in the Brief Description of the Drawings for the figure or be present in the figure itself. If one or more sequences are referred to in the specification that are not present in the Sequence Listing, then a new Sequence Listing, a new CRF diskette containing the Sequence Listing and a new statement that the two are the same and includes no new matter must be submitted in order to fully comply with the Sequence Rules.

Applicants are required to comply with all of the requirements of 37 C.F.R. §§ 1.821 through 1.825. *Any* response

to this Office Action which fails to meet *all* of these requirements will be considered non-responsive. The nature of the noncompliance with the requirements of 37 C.F.R. §§ 1.821 through 1.825 did not preclude the continued examination of the application on the merits, the results of which are communicated below.

Election/Restrictions

Applicant's election without traverse of Group I, species transactivation domain of claim 2, and the nucleic acid comprising 14 nucleotides of claim 33, (now) claims 1, 3-4, 6-7, 9-30, 32-33, 40-46, and 48-55 in Paper No. 14, filed 2/3/03 is acknowledged.

Claims 34-39 and 47 are withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected species, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 14.

Drawings

The instant application contains two totally different sets of drawings:

1. Set A: Figs. 1A-1F,2A-2B, 3, etc. (First filed 11/30/00).

2. Set B: Figs. 1A-1, 1A-2, 1B, 2, 3, etc. (First filed 9/10/01).

Only Set A has a brief description of the drawings. Set B does not appear to have a brief description and it seems to constitute new matter as described below. Because the improper new drawings were filed in response to a Notice of Drawing Requirements mailed 3/13/01, new formal substitute drawings of the original drawings (Set A) is required. Alternatively, a drawing by drawing comparison of the Set B figures showing how they have support from the previous drawings, and an amendment to remove the Set A drawings, along with replacing the brief description of the drawings with one corresponding to the Set B drawings is required. The end result must be that the correct set of drawings for the application be identified and that the drawings correspond to the brief description of the drawings, all of this done without introducing new matter.

Specification

The amendment filed 9/10/01 is objected to under 35 U.S.C. 132 because it introduces new matter into the disclosure. 35 U.S.C. 132 states that no amendment shall introduce new matter into the disclosure of the invention. The added material

which is not supported by the original disclosure is as follows: the drawings (referred to as Set B above).

Applicant is required to cancel the new matter in the reply to this Office Action (or show how these different drawings are not new matter as described above).

Claim Objections

The numbering of claims is not in accordance with 37 CFR 1.126 which requires the original numbering of the claims to be preserved throughout the prosecution. When claims are canceled, the remaining claims must not be renumbered. When new claims are presented, they must be numbered consecutively beginning with the number next following the highest numbered claims previously presented (whether entered or not).

In the instant case, the amendment to the claims filed 2/3/03 used incorrect claim numbering in both the marked up copy of the amendment and in the clean copy. The clean copy was renumbered as below to correspond with the pending claims.

Misnumbered claims 35-85 have been renumbered 1, 3-4, 6-7, 9-30, and 32-55.

Claims 4, 7, and 10 are objected to under 37 CFR 1.75(c), as being of improper dependent form for failing to further limit

the subject matter of a previous claim. Applicant is required to cancel the claim(s), or amend the claim(s) to place the claim(s) in proper dependent form, or rewrite the claim(s) in independent form.

SEQ ID NO:5 is SEQ ID NO:2 (aas. 27-270), SEQ ID NO:4 is SEQ ID NO:2 (aas. 290-374), and SEQ ID NO:6 is SEQ ID NO:2 (aas. 27-192). Because claims 4, 7, and 10 are dependent on claims that already have the sequence limitation written as a fragment of SEQ ID NO:2 which corresponds exactly to the new sequence limitations (SEQ ID NOS:5, 4, or 6), the new sequence limitations do not further limit the claimed sequences.

Claim Rejections - 35 USC § 112

The following is a quotation of the first paragraph of 35 U.S.C. 112:

> The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

Claims 1, 3-4, 6-7, 9-10, 12-15, 18-30 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art

that the inventor(s), at the time the application was filed, had possession of the claimed invention.

The claims are drawn to a DNA segment comprising a protein coding region encoding an Osterix polypeptide. The claims are genus claims because they DNA segments drawn to encoding a polypeptide that is a genus: Osterix (polypeptide comprising SEQ ID NO:2), Osterix isoforms, and other members of the Osterix family. The genus members are vague and indefinite for the reasons set forth below. It is unclear what, if any, structure or function define the genus.

To provide adequate written description and evidence of possession of a claimed genus, the specification must provide sufficient distinguishing identifying characteristics of the genus. The factors to be considered include disclosure of complete or partial structure, physical and/or chemical properties, functional characteristics, structure/function correlation, methods of making the claimed product, or any combination thereof. In the instant case, the only factor present in the claims is that some claims have a partial sequence drawn to a part of SEQ ID NO:2, but not the entire SEQ ID NO:2 sequence. (The claims drawn to the DNA segments comprising a protein coding region encoding an Osterix polypeptide which encode the entire SEQ ID NO:2 are not a part

of the instant rejection.) The partial structures given in some of the claims is not a description of the actual, entire structure of the Osterix polypeptide. The other claims lack even the partial structure. The specification describes the entire structure of two Osterix polypeptides, the mouse Osterix sequence (SEQ ID NO:2) and the human sequence (shown in Figure 10 of the Set A figures). There is no description of the specific structure that defines the genus as claimed and there is no description of what parts of the amino acid sequence can be varied or must be retained. Note: the sequence comparison in Figure 10 merely shows what amino acids are conserved between the single mouse sequence and single human sequence for the protein. It does not describe what sequences are essential for function or what sequences can be varied. It is also not a description of the genus "Osterix polypeptide".

Accordingly, in the absence of sufficient recitation of distinguishing characteristics, the specification does not provide adequate written description of the claimed genus which encompasses Osterix polypeptide.

Vas-Cath Inc. v. Mahurkar, 19USPQ2d 1111, clearly states "applicant must convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of *the invention*. The invention is, for purposes of

the 'written description' inquiry, *whatever is now claimed.*" (See page 1117.) The specification does not "clearly allow persons of ordinary skill in the art to recognize that [he or she] invented what is now is claimed." (See *Vas-Cath* at page 1116). As discussed above, the skilled artisan cannot envision the detailed chemical structure of the encompassed genus of Osterix polypeptides, and therefore conception is not achieved until reduction to practice has occurred, regardless of the complexity or simplicity of the method of isolation or identification. Adequate written description requires more than a mere statement that it is part of the invention and reference to a potential method of isolating it. The compound itself is required. See *Fiers v. Revel*, 25USPQ2d 1601 at 1606 (CAFC 1993) and *Amgen Inc. v. Chugai Pharmaceutical Co. Ltd.*, 18USPQ2d 1016.

One cannot describe what one has not conceived. See *Fiddes v. Baird*, 30 USPQ2d 1481 at 1483. In *Fiddes*, claims directed to mammalian FGF's were found to be unpatentable due to lack of written description for that broad class. The specification provided only the bovine sequence.

Therefore, only the DNA segment encoding an Osterix polypeptide comprising SEQ ID NO:2, but not the full breadth of the claims, meets the written description provision of 35 U.S.C. 112, first paragraph. Applicant is reminded that *Vas-Cath* makes

clear that the written description provision of 35 U.S.C. 112 is severable from its enablement provision (see page 1115).

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1, 3-4, 6-7, 9-30, 32-33, 40-46, and 49 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 1, etc, the use of "Osterix polypeptide" renders the claims vague and indefinite because the metes and bounds of what constitutes such a polypeptide is unclear. "Osterix" appears to be a term coined by the applicants and thus the specification is the only source of the definition of this term. At the top of page 18 of the specification, the following is recited: "The inventors have characterized this molecule as comprising, 428 amino acids, as defined in SEQ ID NO:2. ... Due to the specification of the gene's expression in osteoblasts and in osteoblast precursor cells, the inventors have labeled the identified 428 amino acid molecule "Osterix"." However, later on that page the following is recited: "As used hereinbelow, the

term Osterix should be interpreted to include not only the full length molecule but also isoforms, ... and other members of the Osterix family." Thus, reading the claims and specification as broadly as is reasonable, the second definition seems to be intended. However, because the metes and bounds of what constitutes isoforms and other members of the Osterix family are unclear (because they are not clearly defined), then the term "Osterix" renders the claims vague and indefinite.

Regarding claims 12-15, because they depend on canceled claim 5, it is unclear what pending claim they are intended to be dependent from and thus the metes and bounds of the claimed DNA segments are unclear.

Regarding claim 49, there is no clear positive antecedent basis for "the coding sequence".

Regarding claim 32, etc, the use of "standard hybridization conditions" or "stringent hybridization conditions" renders the claims vague and indefinite because there is no art-recognized clear definition of these terms and the specification fails to set forth a clear definition because the specification merely refers to examples of the conditions without setting forth the metes and bounds of what is encompassed by the terms in a clear fashion.

Double Patenting

Claim 16 is objected to under 37 CFR 1.75 as being a substantial duplicate of claim 11. When two claims in an application are duplicates or else are so close in content that they both cover the same thing, despite a slight difference in wording, it is proper after allowing one claim to object to the other as being a substantial duplicate of the allowed claim. See MPEP § 706.03(k).

Claim 11 is drawn to the DNA segment of claim 1 wherein the polypeptide has the sequence of SEQ ID NO:2 (which is read as comprising the contiguous sequence of SEQ ID NO:2). Claim 16 has identical scope because it is drawn to the DNA segment of claim 1 encoding a polypeptide comprising a contiguous sequence of SEQ ID NO:2.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 32-33 and 40-46 are rejected under 35 U.S.C. 102(b) as being anticipated by Marra et al.

Marra et al teach an isolated cDNA (EST) in a database which comprises a sequence that is 502 nucleotides identical to SEQ ID NO:1. This sequence is of sufficient length and homology to bind to the nucleic acid segment of SEQ ID NO:1 under even the most stringent conditions.

Conclusion

Certain papers related to this application may be submitted to Art Unit 1636 by facsimile transmission. The faxing of such papers must conform with the notices published in the Official Gazette, 1156 OG 61 (November 16, 1993) and 1157 OG 94 (December 28, 1993) (see 37 C.F.R. § 1.6(d)). The official fax telephone number for the Group is 703-872-9306. NOTE: If Applicant *does* submit a paper by fax, the original signed copy should be retained by applicant or applicant's representative. NO DUPLICATE COPIES SHOULD BE SUBMITTED so as to avoid the processing of duplicate papers in the Office.

Any inquiry concerning rejections or other major issues in this communication or earlier communications from the examiner should be directed to Terry A. McKelvey whose telephone number is (703) 305-7213. The examiner can normally be reached on

Monday through Friday, except for Wednesdays, from about 7:30 AM to about 6:00 PM. A phone message left at this number will be responded to as soon as possible (i.e., shortly after the examiner returns to his office).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Dr. Remy Yucel can be reached on (703) 305-1998.

Any inquiry of a general nature or relating to the status of this application should be directed to the Group receptionist whose telephone number is (703) 308-0196.

Terry A. McKelvey, Ph.D.
Primary Examiner
Art Unit 1636

September 30, 2003